

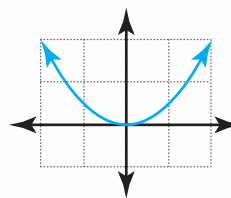
Family Letter

Dear Student and Family Members,

Our next chapter in mathematics is about two fundamental components of algebra: *quadratic relationships* and *inverse relationships*.

We will begin our study of quadratic relationships by analyzing and graphing equations in the form $y = ax^2$, where a represents a constant. For example, the formula for the area of a circle is $A = \pi r^2$. The constant is π , which is approximately 3.14. The distance that a dropped object has fallen is also quadratic: $d = 4.9t^2$, where d represents the distance in meters and t represents the time in seconds. Here the constant is 4.9.

The graph of any quadratic relationship is a symmetric, U-shaped curve called a *parabola*. For more complex quadratic relationships, like the motion of objects that are thrown or shot into the air, the equations take the form $y = ax^2 + bx + c$.



We will also look at inverse relationships, in which the product of two quantities is always the same. For example, suppose you have only \$20 to pay for a babysitter: the number of hours of baby-sitting you can afford depends on the rate. If you pay \$2 an hour, you can afford 10 hours; if you pay \$8, you can afford only 2.5 hours.

We will close the chapter with making and proving conjectures. A *conjecture* is an educated guess that has not been proven correct. Knowing how to make and prove conjectures is a valuable skill students will use in mathematics and elsewhere throughout their future.

Vocabulary Along the way, we'll be learning about several new vocabulary terms:

conjecture	inverse variation	quadratic expression
cubic equation	parabola	reciprocal relationship
hyperbola	quadratic equation	vertex
inversely proportional		

What can you do at home?

Encourage your student to identify inverse relationships like the one described above in his or her everyday life. Use these relationships to solve problems relevant to your student's life.